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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/598,142

08/18/2006

Masaru Shirai

P30470

1550

7055 7590 04/20/2009
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EXAMINER

D'ANIELLO, NICHOLAS P

ART UNIT

PAPER NUMBER

1793

NOTIFICATION DATE

DELIVERY MODE

04/20/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/598,142	Applicant(s) SHIRAI ET AL.	
	Examiner Nicholas P. D'Aniello	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 1-20 and 28-35 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/27/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II, claims 21-27 in the reply filed on March 6th 2009 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a section from MPEP 2114 relating to Apparatus and Article claims – Functional Language: While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function. >*In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997).

3. Claims 21-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Okuno et al. (USP 5,338,008).

In regard to independent claim 21, Okuno et al. teach a solder bump forming apparatus, see figure 1 (*for forming a solder bump through heating and reflowing a solder composition on a substrate where a plurality of pad electrodes are provided*, is intended use MPEP 2111.02 and does not limit the structure of the apparatus however Okuno et al. forms solder bumps on a printed board PB with pad electrodes by reflowing), wherein: (*the solder composition is made of a mixture of solder particles and*

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a liquid material that contains a flux component, which becomes liquid at a normal temperature or when heated, relates to the material worked upon by the apparatus MPEP 2115 and does not limit the structure of the apparatus, however Okuno et al. uses a solder paste i.e. solder particles and flux see column 1 lines 26-45); and a heating device (lower heater 3) is provided for heating the solder composite from the substrate side (column 4 lines 24-29).

In regard to claim 22, a thermostat device (many elements, such as heating element 7, cooling device 10, rectifying plate 11, fan 16, jacket 17) for controlling a temperature of the solder composition is provided at a position above a mount plate (conveyor 2) (column 3 line 66 - column 4 line 50).

In regard to claim 23, the thermostat device comprises a radiation plate (jacket 17, gas blowing port 12 in plate) for heating the solder composition by radiant heat and a heating section (preheating section S or heating section H) for heating the radiation plate (figure 2).

In regard to claim 24 the thermostat device comprises a heat absorbing plate (rectifying plate 11) for depriving heat of the solder composition and an endothermic section (cooling section C) for cooling the heat absorbing plate (figures).

In regard to claim 25, the heating device 3 applies heat by blowing hot air (with fan 16) to a bottom side of the substrate (figures).

In regard to claim 26, the heating device 3 heats a bottom side of the substrate by thermal conduction (forced air is thermal conduction).

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4. Claims 21, 26 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Campbell (USP 4,334,646).

In regard to independent claim 21, Campbell et al. teach a solder bump forming apparatus, see figure 1 (*for forming a solder bump through heating and reflowing a solder composition on a substrate where a plurality of pad electrodes are provided*, is intended use MPEP 2111.02 and does not limit the structure of the apparatus however Campbell forms solder bumps on a substrate 44, 50 with bonding/solder pads 12, 24, 22 i.e. pad electrodes by reflowing), wherein: (*the solder composition is made of a mixture of solder particles and a liquid material that contains a flux component, which becomes liquid at a normal temperature or when heated*, relates to the material worked upon by the apparatus MPEP 2115 and does not limit the structure of the apparatus, however Campbell uses a solder paste i.e. solder particles and flux see column 1 lines 30-40); and a heating device (heater 34) is provided for heating the solder composite from the substrate side (column 3 lines 46-50).

In regard to claim 26, the heating device 34 heats a bottom side of the substrate 44, 50 by thermal conduction (through container 30).

In regard to claim 27, the substrate 44, 50 is immersed in the solder composition within a container 30; and the heating device heats the solder composition from the substrate side through the container (column 3 lines 46-50).

Inquiries

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas P. D'Aniello whose telephone number is (571)270-3635. The examiner can normally be reached on Monday through Thursday from 8am to 5pm (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. P. D./
Examiner, Art Unit 1793

/Jessica L. Ward/
Supervisory Patent Examiner, Art Unit 1793